

CLAIMS

[Claim 1] A torque measuring device comprising:

a laser light output device for outputting laser light;

a light transmitting and receiving device for irradiating the laser light from the laser light output device to the surface of a rotational body and receiving reflected light;

reflectors, which are provided on the surface of the rotational body with a space in the axial direction and reflect the laser light irradiated from the light transmitting and receiving device in a given reflection pattern; and

a signal processing device for obtaining torque of the rotational body based on the reflected light received at the light transmitting and receiving device,

wherein the light transmitting and receiving device includes:

polarization-maintaining fiber circulators for polarizing the laser light from the laser light output device and outputting the polarized laser light, and for inputting reflected light of the polarized laser light through the same light path as the light path, through which the polarized laser light is output, separating the reflected light from the laser light from the laser light output device, and outputting the reflected light to the signal processing device; and

light irradiation detecting sections, which are provided facing the surface region of the rotational body provided with the reflectors, for inputting polarized laser light from the polarization-maintaining fiber circulators, and irradiating the polarized laser light to the surface region of the rotational body, and for detecting the reflected light and

transmitting the detected reflected light to the same light path as the light path, to which the polarized laser light from the polarization-maintaining fiber circulators is input.